

Inez Michiels

[Inez.michiels@gmail.com](mailto:Inez.michiels@gmail.com)

**Abstract:** One of the main problems with dementia is a failing communication ability, creating misunderstandings between the experiential and emotional world of the person with dementia and the guidance by the care providers in a neuro clinic or in a residential care facility. Secondly, the emotional heaviness and depression that accompanies the illness is an additional burden for people with dementia and their loved ones. These two aspects: communication failure about the emotional life and the depressing forces of the disease, are addressed in the present design. Who am I today? is a set of badges depicting a range of characters representing emotions. The intention is that persons with dementia express their feelings and state of mind by selecting a suitable badge. Thus making an opening to gain insight into their emotional world in a humorous yet respectful way so care providers can respond better to the experiences of the people suffering from dementia, with well-being as a result.

**Keywords:** *communication; humour; semantics; environmental psychology*

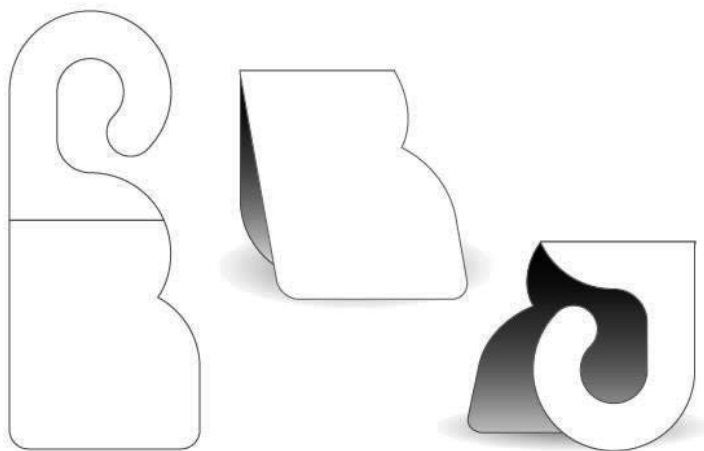
## 1. Introduction

Who am I today? was conceived after four months of participation in the neuro clinic of the ZNA hospital and in the residential care facility Cadiz both in Antwerp Belgium, between November 2018 and March 2019. I was an informal caregiver for my husband who was suffering from Alzheimer's and I accompanied him daily. As such I have experienced that a lack of empathy of the care providers due to the residents' failing communication ability is a major obstacle to the well-being of these people. Forgetting words, using incorrect words and difficulties to understand the language of care providers is one of the main problems with dementia. This creates misunderstandings between the experiential and emotional worlds of the persons suffering from dementia and the guidance by the care providers, with apathetic or even aggressive reactions as a result.

In addition, I saw that the disease also caused hilarious moments, whereby laughter was a beneficial remedy for the daily burden, powerlessness and hopelessness to which my husband, myself and our fellow sufferers were subjected. In order to alleviate this heaviness, a playful humorous approach to the communication problem was chosen. Because of the beautiful drawings and the attractive implementation of the badges, the humour is not derogatory. The humour lies mainly with the caregivers who are disarmed and moved by it, so that they become motivated to acknowledge the residents' feelings and respond effectively to them.

## 2. The Design

The presented prototype contains 20 badges with simple drawn characters that are composed of combinations of basic emotions and that are represented in primary colours. A wall rack with brackets organizes the badges clearly where they can easily be removed and put back. The drawings are printed on non-tearable, washable paper, 12cm height and 10cm width in size. At the top of the badge is a hanger. Verso is printed a short text about the emotion and what the care provider can do to improve the resident's feeling. The badge can either be shown via the hanger attached to clothing, belt, wheelchair, door handle or other carrier, or be placed upright on a table or other flat surface. The choice in the way the badge is shown is kept as free as possible, from discreet (only visible to certain care providers in the private room) to manifest (visible to everyone anytime on clothing, personal bag, or wheelchair).



**Figure 1** Use the badge as a hanger or placed upright on a flat surface.

### 3. How it works

The residents of a neuro clinic or a residential care facility express their feelings and state of mind by carrying or positioning a badge depicting a personality that expresses an emotion. Offered on a rack on the wall the residents can choose one themselves or a regular voluntary carer such as a family member or friend can choose one for them on the basis of an event that affected them that day or moment. For instance the experience: “someone with a sharp object came to me, making me afraid of being injured”, is expressed by The Wounded Soldier badge. The emotion is: “someone hurt me. I feel badly treated”. The request for the care provider could be: “please hear my complaint, so it can't happen again”. By asking residents about the character of choice, or reading the information on the back of the badge, an opening can be found to gain insight into their needs and respond accordingly. The badges are best offered on a rack at a fixed point in the institution, in a quiet location but not too far from the common areas. Using multiple badges per person, as well as changing badges during the day is possible. After use, the badges are returned to the rack.

### 4. Emotion, semantics and colour

The proposed twenty emotions and their accompanying characters were selected and compiled based on the work of environmental psychologists Mehrabian & Russell (1974). In their Bio-informational theory, cognitive processes are linked to neural connections in the brain, that have laid their basis in evolution. According to this theory, supported by considerable empirical research, emotions are networks of information - stimulus, response, and semantic concepts - that are connected by associations (Lang et al, 1993). The tendency to respond to a stimulus and its physiological manifestations are linked to nodes in the brain that represent properties of emotion-provoking stimuli. In such a way that fundamental characteristics of the stimulus such as colour and shape can influence the emotional response (Detenber & Reeves, 1996). Moods or emotional states are minor divisions, which are determined by their place within the 3-dimensional coordinate space of Pleasure, Dominance and Arousal (hereafter referred to as PDA).

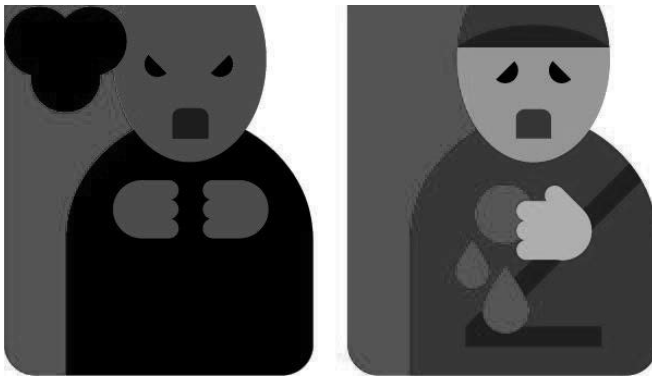
The meaning of the characters and their related emotions are more easily recognized and understood by meaningfully linking them to colours. Research has shown that short-term memory, which is the first to be impaired in Alzheimer's patients, can still function due to specific use of a lively colour coding of their surroundings (Cernin et al., 2003). A possible explanation for this could be that people can retain or remember events, functions and meaning better if they are linked to emotions (Buijssen, 2007). Colour is a strong emotional transferor, causing better imprinting on the persons with dementia with better understanding as a result. It seems likely that the colour code will work optimally if it supports the meaning or emotion.

The colour theory of Genetic Semantics (Alpaerts, 2018) seems best suited to achieve the intended effect. This theory assumes an innate language structure and makes logical connections between colours, meaning and emotional effect in accordance with the functioning of the nervous system and the brain. Genetic Semantics explains the giving of meaning from innate structures of information processing and uses, similar to the Bio-informational theory, a spatial classification system, a coordinate system in which opposites can be placed in three dimensions. Ideas get a codon code (a combination of three digits), denoting their location within the coordinate system. The same applies to the primary colours, which, by virtue of their dimensional properties, occupy a fixed place in the semantic space and thereby acquire a codon code and a meaning.

Given that the Bio-Informational theory and Genetic Semantics use an identical dimensional model, a conversion from emotion to semantic codon code to primary colour is feasible. The proposed twenty emotions are each compositions of two basic emotions and consequently combine two primary colours. We elaborate on two characters (See figure 2).

-P -D -A	-P +D +A	-P -D -A	-P -D +A	+P +D -A	+P +D +A	+P -D -A	+P -D +A
000	001	010	011	100	101	110	111
blue	black	green	purple	brown	red	white	yellow
disdainful	angry	bored	aghast	comfort- able	admired	docile	amazed
disgust	hostile	fatigued	anxious	relaxed	bold	sleepy	curious
indifferent	violent	inhibited	distressed	satisfied	dignified		dependent
uncon- cerned		sad	hungry		elated		grateful
			insecure		excited		loved
			puzzled		exuberant		respectful
					happy		
					surprised		

**Table 1** The conversion of the PDA values and associated emotions, via the codon code from Genetic Semantics to the primary colours.



**Figure 2** Characters the Protester and the Wounded Soldier.

Character the Protester is the personality that expresses anger. It is a combination of emotions: angry (BLACK) + bold (RED). In the study by Eva Heller into the effect of colors (1989), 55% of the respondents chose red and 15% black for the keyword anger. Black-on-red is a rebellious color combination (compare the iconic image of Che Guevara).

The Wounded Soldier pictures being hurt, a combination of contempt (BLUE) + excited (RED). Both emotions making part of the act of hurting someone. The colour combination blue-on-red is dominantly used in the logos of butchers.

## 5. The characters

List of the 20 characters with their basic emotions and colours, supplemented with a description of the emotional state and the request to the care provider.

1. The Naked: docile (WHITE) + hostile (BLACK).  
Feeling uncovered and exposed in a hostile environment.  
Please care for my dignity and privacy.
2. The Victim: hostile (BLACK) + indifferent (BLUE).  
Feeling deeply sad and down. Please comfort me, hold me.
3. The Sailor: disgust (BLUE) + hungry (PURPLE).  
Feeling ill, nausea, not hungry.  
Please let me lay down in my bed and don't force me to eat.
4. The Prisoner: hostile (BLACK) + inhibited (GREEN).  
I want to break out, but I can't find the way.  
Please let someone take me out, away from this place.
5. The Worshipper: elated (RED) + loved, grateful (YELLOW).  
Feeling just plain happy and grateful. Thank you for your warm care.
6. The Ms/Mr Feelgood: sleepy (WHITE) + comfortable (BROWN).  
Feeling relaxed, no fears or dangers. Please I'm in for a chat or a massage.
7. The Tightrope Walker: violent (BLACK) + anxious (PURPLE).  
Afraid of falling. Please help me with getting up, walking, ...
8. The Tortured: violent (BLACK) + anxious (PURPLE).  
I feel pain. Please relieve me.
9. The Scared: anxious (PURPLE) + fatigued (GREEN).  
Feeling so afraid, can't explain why or for what.  
Please do something to dispel the fear.
10. The Protester: angry (BLACK) + bold (RED).  
Someone made me so angry, I could kill that person.  
Don't come near and don't touch me!
11. The Lord of Castle: relaxed (BROWN) + indifferent (BLUE).  
You can't touch me, so don't try. I have nothing to do with the lot of you.

12. The Horny: hungry (PURPLE) + aroused (RED).  
I feel horny. Looking for a partner :)
13. The Roman Senator: satisfied (BROWN) + fatigued (GREEN).  
I have a great appetite for food.  
Please can I have a cookie or something hearty.
14. The Detective: hostile (BLACK) + curious (YELLOW).  
I try to figure out what is going on here.  
It probably is something unlawful. Let me continue my investigation.
15. The Labyrinth Dweller: puzzled (PURPLE) + fatigued (GREEN).  
I can't find my room back. In fact, don't know anything anymore.  
Please talk to me! Bring me to my room.
16. The King: dignified (RED) + angry (BLACK).  
People should respect me for who I am and what I want.  
Treat me with dignity, and take my requests seriously.
17. The Wounded Soldier: contempt (BLUE) + excited (RED).  
Somebody hurt me. I feel badly treated.  
Please hear my complaint, so it can't happen again.
18. The Waiter: annoyed (GREEN) + inhibited (GREEN).  
Feeling bored having to wait all the time for someone or something.  
Please stop letting me waiting.
19. The Chimney Sweep: hostile (BLACK) + disgust (BLUE).  
Feeling dirty and that's unpleasant. Please can someone clean me up?
20. The Partygoer: cheerful (YELLOW) + crazy (PURPLE).  
I feel excited over something good that happened to me.  
Let's have a party!

## 6. The target group

Who am I today? can be used both in a neuro clinic and in a residential care facility. Most of the people with early to moderate dementia are able to use the tool themselves. When the condition deteriorates, the caregivers close to the residents, can take over the choice of badges. The residents can already be made familiar with the tool from the start of their admission, so that the tool is more likely to be helpful as the dementia worsens.

## 7. The future

The design proposed here is one of the many possible versions. Tests must be performed at various points:

- The characters, the connected emotions and the colours;
- The outer shape of the badge, the drawings, the hanger;
- How the badges are offered locally;

- How the residents respond;
- How the care providers respond.

Care providers are encouraged to test Who am I today? in their neuro clinic or residential care facility. Contact the author at [inez.michiels@gmail.com](mailto:inez.michiels@gmail.com).

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